REMARKS

Sequence Listing

Applicants have submitted on even date a Substitute Sequence Listing (paper copy only). In response to the Notice to Comply with Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures mailed from the Patent Office on January 30, 2002, Applicants submitted (on March 28, 2003) a diskette contianing the Substitute Sequence Listing in computer readable form as required by 37 C.F.R. 1.821(e). A paper copy was not supplied at that time.

Applicants now note that the paper copy of the Sequence Listing filed with the instant application (on March 20, 2001) included a misnumbering of sequences, with SEQ ID NO:69 through SEQ ID NO:75 being utilized twice, and duplication of certain sequences, namely a pAN296 plasmid sequence included as SEQ ID NO:69 (first use) and SEQ ID NO:71 (second use), a pAN336 plasmid sequence included as SEQ ID NO:70 (first use) and SEQ ID NO:72 (second use), a pAN341/342 plasmid sequence included as SEQ ID NO:71 (first use) and SEQ ID NO:73 (second use), a pOTP71 plasmid sequence included as SEQ ID NO:73 (first use) and SEQ ID NO:74 (second use), a plasmid sequence pOTP72 included as SEQ ID NO:74 (first use) and SEQ ID NO:75 (second use) and a plasmid sequence pOTP73 included as SEQ ID NO:75 (first use) and SEQ ID NO:76. Also submitted on even date herewith is a statement that the content of the Substitute Sequence Listing appearing at pages 1-63 and the computer readable copy (submitted on March 20, 2001) are the same as required under 37 C.F.R. 1.821(f). No new matter has been added.

The misnumbering and duplication was corrected on the Substitute Sequence Listing diskette submitted March 28, 2002 and a paper copy of said Substitute Sequence Listing is being submitted on even date herewith.

Amendments

Claims 1-15, 17-25 and 37 are pending in the instant application. Claims 2-5, 9, 11-12, 14 and 37 have been amended to more distinctly describe the claimed subject matter. Claims 1, 13, 15 and 25 have been cancelled without prejudice. Accordingly, claims 2-12, 14, 17-24 and

37 will be pending upon entry of the instant amendment. Support for the claim amendments can be found throughout the specification and claims as originally filed. Amendment to the claims does not constitute the addition of new matter. Attached hereto as Appendix A is a marked-up version of the amended claims to show the changes made. Also attached, for the Examiner's convenience, is Appendix B which includes all of the claims that will be pending after entry of the instant amendment. Also submitted on even date herewith is a statement that the content of the Substitute Sequence Listing appearing at pages 1-63 and the computer readable copy (submitted on March 20, 2001) are the same as required under 37 C.F.R. 1.821(f). No new matter has been added.

SUMMARY

It is respectfully submitted that the amended claims are in condition for allowance. If a telephone conversation with Applicants' Attorney would expedite the prosecution of the above-identified application, the Examiner is urged to call the undersigned at (617) 227-7400.

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APPENDIX A
VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 2-5, 11-12, 14 and 37 have been amended as indicated below.

2. (Amended) The assay of claim [1] 37, wherein the assay composition comprises purified CoaX protein.

3. (Amended) The assay of claim [1] 37, wherein the assay composition comprises partially purified CoaX protein.

4. (Amended) The assay of claim [1] 37, wherein the assay composition comprises crude cell extracts from a cell producing CoaX protein.

5. (Amended) The assay of claim [1] 37, wherein the CoaX protein is encoded by a *coaX* gene derived from a pathogenic bacteria selected from the group consisting of *Bordetella pertussis, Borrelia burgdorferi, Campylobacter jejuni, Clostridium difficile, Helicobacter pylori, Neisseria meningitidis, Pseudomonas aeruginosa, Treponema pallidum* and *Xylella fastidiosa*.

9. (Amended) The assay of claim [1] 37, wherein the CoaX is encoded by a *coaX* gene derived from a bacteria selected from the group consisting of *Aquifex aeolicus, Bacillus anthracis, Bacillus halodurans, Bacillus stearothermophilus, Bacillus subtilis, Caulobacter crescentus, Chlorobium tepidum, Clostridium acetobutylicum, Dehalococcoides ethenogenes, Deinococcus radiodurans, Desulfovibrio vulgaris, Geobacter sulfurreducens, Pseudomonas putida, Rhodobacter capsulatus, Thiobacillus ferrooxidans, Streptomyces coelicolor, Synechocystis sp., Thermotoga maritima, Bordetella pertussis, Borrelia burgdorferi, Campylobacter jejuni, Clostridium difficile, Helicobacter pylori, Neisseria meningitidis, Neisseria gonorrhoeae, Porphyromonas gingivalis, Pseudomonas aeruginosa, Treponema pallidum, Xylella fastidiosa* and *Mycobacterium tuberculosis*.

11. (Amended) The assay of claim [1] 37, wherein said composition is further contacted with pantothenate or a pantothenate analog.

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12. (Amended) The assay of claim 11, wherein the ability to [modulate] inhibit the activity of the CoaX protein is determined based on the ability of the test compound to [effect] affect levels of pantothenate or pantothenate analog in the assay mixture.

14. (Twice Amended) The assay of claim [13] 37 wherein step (b) further [comprising] comprises determining the ability of the test compound to [inhibit the activity of] bind to the CoaX protein; wherein the compound is identified as a potential antibiotic based on the ability of the compound to bind to and inhibit the activity of the CoaX protein.

37. (Amended) An assay for the identification of an antibiotic, comprising;

(a) contacting an assay composition comprising a pantothenate kinase with a test compound, wherein the pantothenate kinase is a CoaX protein; and

(b) determining the ability of the test compound to [bind to or modulate] inhibit the activity of the pantothenate kinase;

wherein the test compound is identified as an antibiotic based on the ability of the compound to [bind to or modulate] inhibit the activity of the pantothenate kinase.

APPENDIX B
CLAIMS PENDING AFTER PRELIMINARY AMENDMENT

2. (Amended) The assay of claim 37, wherein the assay composition comprises purified CoaX protein.

3. (Amended) The assay of claim 37, wherein the assay composition comprises partially purified CoaX protein.

4. (Amended) The assay of claim 37, wherein the assay composition comprises crude cell extracts from a cell producing CoaX protein.

5. (Amended) The assay of claim 37, wherein the CoaX protein is encoded by a *coaX* gene derived from a pathogenic bacteria selected from the group consisting of *Bordetella pertussis, Borrelia burgdorferi, Campylobacter jejuni, Clostridium difficile, Helicobacter pylori, Neisseria meningitidis, Pseudomonas aeruginosa, Treponema pallidum* and *Xylella fastidiosa.*

6. The assay of claim 5, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID NO:43 or SEQ ID NO:22, SEQ ID NO:20, SEQ ID NO:10 and SEQ ID NO:65.

7. The assay of claim 1, wherein the CoaX protein is encoded by a *coaX* gene derived from a pathogenic bacteria selected from the group consisting of *Bacillus anthracis, Bordetella pertussis, Borrelia burgdorferi, Campylobacter jejuni, Clostridium difficile, Helicobacter pylori, Neisseria meningitidis, Neisseria gonorrhoeae, Porphyromonas gingivalis, Pseudomonas aeruginosa, Treponema pallidum* and *Xylella fastidiosa.*

8. The assay of claim 7, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:45, SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID NO:43 or SEQ ID NO:22, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:20, SEQ ID NO:10 and SEQ ID NO:65.

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9. (Amended) The assay of claim 37, wherein the CoaX is encoded by a *coaX* gene derived from a bacteria selected from the group consisting of *Aquifex aeolicus, Bacillus anthracis, Bacillus halodurans, Bacillus stearothermophilus, Bacillus subtilis, Caulobacter crescentus, Chlorobium tepidum, Clostridium acetobutylicum, Dehalococcoides ethenogenes, Deinococcus radiodurans, Desulfovibrio vulgaris, Geobacter sulfurreducens, Pseudomonas putida, Rhodobacter capsulatus, Thiobacillus ferrooxidans, Streptomyces coelicolor, Synechocystis sp., Thermotoga maritima, Bordetella pertussis, Borrelia burgdorferi, Campylobacter jejuni, Clostridium difficile, Helicobacter pylori, Neisseria meningitidis, Neisseria gonorrhoeae, Porphyromonas gingivalis, Pseudomonas aeruginosa, Treponema pallidum, Xylella fastidiosa* and *Mycobacterium tuberculosis*.

10. The assay of claim 9, wherein the CoaX protein has an amino acid sequence selected from the group consisting of SEQ ID NO:12, SEQ ID NO:70, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:2, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:3, SEQ ID NO:57, SEQ ID NO:8, SEQ ID NO:59, SEQ ID NO:7, SEQ ID NO:61, SEQ ID NO:6, SEQ ID NO:63, SEQ ID NO:4, SEQ ID NO:13, SEQ ID NO:9, SEQ ID NO:15, SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:55, SEQ ID NO:14 or SEQ ID NO:67, SEQ ID NO:43 or SEQ ID NO:22, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:20, SEQ ID NO:10, SEQ ID NO:65 and SEQ ID NO:5.

11. (Amended) The assay of claim 37, wherein said composition is further contacted with pantothenate or a pantothenate analog.

12. (Amended) The assay of claim 11, wherein the ability to inhibit the activity of the CoaX protein is determined based on the ability of the test compound to affect levels of pantothenate or pantothenate analog in the assay mixture.

14. (Twice Amended) The assay of claim 37 wherein step (b) further comprises determining the ability of the test compound to bind to the CoaX protein; wherein the compound is identified as a potential antibiotic based on the ability of the compound to bind to and inhibit the activity of the CoaX protein.

17. (Amended) The assay of claim 37 wherein the assay composition comprises a recombinant cell expressing a single pantothenate kinase encoded by a coaX gene.

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18. (Amended) The assay of clam 37 wherein the assay composition comprises a recombinant cell expressing a first and second pantothenate kinase, wherein the first or second pantothenate kinase has reduced activity.

19. The method of claim 18, wherein said first pantothenate kinase is encoded by a *coaA* gene and said second pantothenate kinase is encoded by a *coaX* gene.

20. The method of claim 18, wherein said first pantothenate kinase is encoded by a *coaX* gene and said second pantothenate kinase is encoded by a *coaA* gene.

21. The method of claim 18, wherein said recombinant cell is a Gram negative microorganism

22. The method of claim 18, wherein said recombinant cell is a Gram positive microorganism

23. The method of claim 18, wherein the microorganism is of the genus *Bacillus* or *Escherchia.*

24. The method of claim 18, wherein the microorganism is *Bacillus subtilis* or *Escherchia coli.*

37. (Amended) An assay for the identification of an antibiotic, comprising;

(a) contacting an assay composition comprising a pantothenate kinase with a test compound, wherein the pantothenate kinase is a CoaX protein; and

(b) determining the ability of the test compound to inhibit the activity of the pantothenate kinase;

wherein the test compound is identified as an antibiotic based on the ability of the compound to inhibit the activity of the pantothenate kinase.